

G27 Thresholding Adulthood: What Are We Doing?

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Learning Overview: The goal of this presentation is to describe the current application of dental age estimation procedures with respect to thresholding adulthood in many parts of the world and provide estimates of the number of errors made. The forensic odontologist engaged in providing opinion to any authority around thresholding adulthood should be aware of the limitations of the science that they employ and the implications to the individual concerned.

Impact on the Forensic Science Community: The role of forensic scientists in advising policy makers is important to the outcome of the application of that branch of science. If mistakes are being made in the area of thresholding of adulthood, solutions need to be discussed and efforts made to reduce or eliminate those mistakes. This presentation will impact the forensic science community by informing attendees of some of the challenges faced in this area of science, and some possible solutions to help them maintain a role as a responsible forensic practitioner.

The idea of an age at which adulthood is reached is a common notion worldwide. This chronological marker varies, and has different implications, in different parts of the world. This threshold age of adulthood is almost invariably an inflexible and meaningful border between being a child and being considered by the law, as well as by society, as an adult. The threshold age itself may well be viewed as an arbitrary value, given the variability in human maturation, but it is nonetheless a strict and binary judge between childhood and adulthood. It is a breach of the human rights of any child to be treated under the law incorrectly as an adult.

In many cases, the chronological age of an individual is not known. In such cases, the law often requires an age to be ascribed to these individuals, along with the rights and responsibilities of that age group. This process often occurs when undocumented people are crossing borders. Many methods have been employed to aid with this determination of age, all of which are based on a system of estimation.

Dental maturity is widely regarded as one of the most reliable indicators of chronological age estimation.¹ Unfortunately, the accuracy of dental age estimation varies with the age and stage of the individual concerned. As a general rule, dental aging methods tend to be more accurate the younger the individual in question is, and thresholding adulthood, if that age is 18 years, is difficult.

Dental age estimation around 18 years of age tends to rely on the development of the third molar teeth. Famously, in 1993 Harry Mincer et al. published the results of a study of 823 individuals and he found that "... the association between chronological age and the formation of the third molar is, at best, moderate," and that with intermediate indicators only, he described it as a "coin-toss" if the individual had reached 18 years of age.² Since that time, many researchers have strived to improve on our ability to reliably threshold a given individual as an 18-year-old using dental maturation.

Forensic odontologists have a responsibility to examine the methods they are using, and how the information that they are providing is being used. As a group, we should always be considering our role in any forum for which we provide information. In this case, the question that may need to be discussed is "despite us being the best at age estimation around thresholding adulthood, what level of inaccuracy is acceptable to us before we shouldn't be doing it at all?" The justification that we are not the judge, and we are simply supplying information to a decision maker, may or may not be ethically satisfying.

Simply put, despite best intentions and skillful application of the known science, because of the limitations of our current methods, forensic odontologists may be involved in a process that sometimes wrongly thresholds a child as an adult and visa versa.

Our role as forensic odontologists also includes educating policy makers around the functional application of our science. If there is a problem with the way our expert opinion is being used, then we should be actively engaged in providing a solution.

Reference(s):

1. Lewis J.M., Senn D.R. Dental age estimation utilizing third molar development: A review of principles, methods, and population studies used in the United States. *Forensic Science International*. 2010; 20:79-83.
2. Mincer H.H., Hanis E.F., Berryman H.E. The ABFO study of third molar development and its use as an estimator of chronological age. *J Forensic Sci* 1993; 38: 379-90.

Age Assessment, Thresholding Adulthood, Human Rights